

# *ABSTRACT*

A multiplexing QAM apparatus according to the invention is provided with a QAM unit and a modulated waves combining unit. The QAM unit generates plural QAM-modulated waves by QAM-modulating plural input data (including a case of data  
5 obtained by dividing a single piece of input data) using a common carrier frequency. The modulated waves combining unit generates a multiplexed QAM-modulated wave by combining the plural QAM-modulated waves together after giving a gain difference to them. In doing so, the modulated waves combining unit gives the gain difference to the plural QAM-modulated waves before the synthesis so that no overlap will occur in a symbol position  
10 arrangement of the synthesized multiplexed QAM-modulated wave.